



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of

Inventor(s): Masayoshi KUMAGAI et al.

U.S. Patent Application No. 10/667,463 : Group Art Unit: 3616

Filed: September 23, 2003 : Examiner: F.M. Fleming

For: AIRBAG APPARATUS

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

June 19, 2006

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action of March 21, 2006 after filing a Notice of Appeal dated December 13, 2005, Applicants request reinstatement of appeal.

This Appeal Brief is filed pursuant to 37 CFR § 41.37. A credit card authorization form in the amount of \$500.00 is attached for the Brief fee.

I. REAL PARTY IN INTEREST

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The real party in interest in this appeal is Assignee Takata Corporation.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' representative, and the Assignee of this application are aware of no other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

This is an appeal from the final rejection of claims 1-7 as maintained in the non-final Office Action of March 21, 2006.

Claims 1-13 are pending in the application. Claims 1-7 stand rejected, and the rejection of each of claims 1-7 is appealed. Applicant appreciates the indication that claims 8-13 are allowed.

Claims 1-7 on appeal are set forth in their entirety in the claims Appendix attached hereto.

IV. STATUS OF AMENDMENTS

No amendment has been filed in response to the Office Action of March 21, 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to an airbag apparatus for protecting an occupant in a vehicle in case of a side collision. More specifically, the present invention relates to an airbag apparatus having an airbag with an interior divided into a plurality of chambers (specification page 1, lines 5-9).

The invention overcomes problems associated with conventional airbag devices. For example, in one conventional device, a tubular housing communicates between the lower chamber and the upper chamber. Therefore, when the lower chamber of the deployed airbag is impacted by an occupant, the gas in the lower chamber flows through the tubular housing into the upper chamber. As a result, it is difficult to maintain the gas pressure in the lower chamber for a long time. (specification page 2, lines 15-20).

Accordingly, it is an object of the present invention to provide an airbag apparatus in which a gas pressure in a lower chamber is maintained at a high pressure for a sufficiently long time (specification page 2, line 28 – page 3, line 2).

The invention, as recited in independent claim 1, is directed to an airbag apparatus (specification page 3, line 8; reference number 1) including an occupant-side surface (specification page 3, lines 8-9; reference number 1p) facing an occupant when deployed, and a vehicle-body-side surface (specification page 3, lines 9-10; reference number 1q) opposite to the occupant-side surface, and at least an upper chamber and a lower chamber (specification page 3, lines 11-12; reference numbers 1a and 1b); a gas generator (specification page 3, lines 12-13; reference number 3) disposed in the airbag for inflating the airbag; a communicating portion (specification page 9, lines 29-30) between the upper and lower chambers, and a check valve (specification page 3, lines 18-19; reference number 6b) disposed in the communicating portion for preventing the gas from flowing from the lower chamber to the upper chamber.

In the airbag apparatus, when the vehicle encounters a side collision or overturn, the gas generator 3 is activated to eject gas, which flows to the lower chamber 1a and the upper chamber 1b to deploy the chambers 1a, 1b (paragraph 0037).

When the occupant crushes into the upper chamber 1b, the gas in the upper chamber 1b flows out through the vent hole 5 to absorb an impact on the occupant. When the body of the occupant crushes into the lower chamber 1a, the check valve 6c blocks communication between the lower chamber 1a and the upper chamber 1b. Consequently, the gas pressure in the lower chamber 1a is held at a high level, thereby holding a middle portion of the occupant for a long time (paragraph 0038).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,722,685 to Eyrainer et al. (“Eyrainer”) in view of U.S. Patent No. 5,957,493 to Larsen et al. (“Larsen”).

The Office Action asserts that Eyrainer teaches all recited features of claim 1 except for “a check valve disposed in the communicating portion for preventing the gas from flowing from the lower chamber to the upper chamber.” The Office Action relies upon Larsen to cure the deficiencies of Eyrainer.

VII. ARGUMENT

The Office Action rejected claims 1-7 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,722,685 to Eyrainer et al. (“Eyrainer”) in view of U.S. Patent No. 5,957,493 to Larsen et al. (“Larsen”). Appellants respectfully disagree.

As argued below, Appellants believe the Examiner’s assertion of obviousness in combining the teachings of Eyrainer and Larsen to be improper; for to do so would render the airbag apparatus of Eyrainer inoperable.

Independent claim 1 recites, *inter alia*, a gas generator disposed in the airbag for generating gas to inflate the airbag and a check valve disposed in the communication portion between the upper and lower chambers for preventing the gas from flowing from the lower chamber to the upper chamber.

The Examiner asserts that Eyrainer discloses an airbag apparatus comprising an upper and lower chamber and a communication portion between the upper and lower chambers. The Examiner acknowledges that Eyrainer fails to disclose a check valve and relies upon Larsen to cure the deficiencies of Eyrainer, asserting that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a “check valve to control the flow of inflation gas during the deployment of the airbag.” Appellants respectfully disagree.

Larsen only discloses, at column 5, lines 14-23, a check valve that prevents inflation gases from flowing back through an inflation gas inlet opening to the other airbag or airbag chamber. In particular, the check valve prevents the gas from flowing back to an intermediate chamber 25 where an inflator assembly 26 is provided. Therefore, the check valve is not provided between the upper and lower chambers.

Further, Appellants respectfully submit that the combination or modification of references can not render the resultant combination obvious unless the prior art also suggest the desirability of the combination. Appellants submit that Eyrainer fails to disclose, teach or suggest the desirability of such a check valve between the upper and lower chambers, as recited by claim 1, because such a check valve or plurality of check valves would, at the least, not prevent the gas from flowing from the lower chamber to the upper chamber, and at the worst, prevent proper inflation of the upper chamber and/or lower chambers. Indeed, the airbag apparatus of Eyrainer would be rendered inoperable if a check valve as disclosed by Larsen was combined with the teachings of Eyrainer.

Contrary to the invention of claim 1, Eyrainer teaches a multiple chamber airbag wherein the outlet of the gas source is in one, or more specifically, the lowermost chamber, and the downstream airbags inflate sequentially. Eyrainer discloses, at column 2, lines 10-67, and Fig. 2, a thorax protecting gas bag 14 connected to a head protecting gas bag 16, the thorax protecting gas bag further comprising a first chamber 26 and a second chamber 28. Furthermore, Eyrainer discloses gas source outlet opening 18 in the first, or lower chamber 26 of the thorax protecting gas bag 14. Due to the placement of the outlet opening 18, gas initially flows into the first chamber 26 of the thorax protecting bag, out of the first chamber 26 into the second chamber 28 of the thorax protecting bag, and from the same into the head protecting bag 16, see column 3, lines 1-10. Owing to the dividing seams between the first, second and head protecting bags, the thorax protecting bag 14 will completely deploy before the head protecting gas bag 16 is completely deployed.

From the foregoing, it can be seen that if a check valve is placed between any of the chambers, the check valve must be arranged to prevent gas from flowing from an upper chamber to a lower chamber and not prevent gas from flowing from the lower chamber to the upper chamber, different from the recitation in claim 1. Furthermore, if the direction of the

check valve were reversed, i.e. to prevent gas from flowing from the lower chamber to the upper chamber, the valve would render the airbag apparatus inoperable by preventing any airbag downstream of the check valve from inflating. Namely, only the lower chamber 26 is inflated.

Thus, while Eyrainer may disclose an airbag comprising at least an upper chamber and a lower chamber, a gas generator, and a communicating portion; and Larsen may disclose a check valve for preventing inflation gasses from flowing back through the inflation gas inlet to another airbag chamber, because such a combination would result in an inoperable airbag, there indeed can be no suggestion in the applied references of Appellants' claimed device in which the check valve prevents the gas from flowing from the lower chamber to the upper chamber.

Accordingly, Appellants submit that the combination of Eyrainer and Larsen is improper and therefore, claim 1 is patentable over the applied art. Claims 2-7 are likewise patentable over the applied references at least in view of their dependence on claim 1.

For the reasons shown above, Appellants respectfully but forcefully content that all claims on appeal are considered patentable over the applied art of record. Accordingly, reversal of the Examiner's Rejection is believed appropriate and courteously solicited.

If for any reason this Appeal Brief is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned, Appellants' attorney of record.

Respectfully submitted,



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IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

1. An airbag apparatus for protecting an occupant in a vehicle, comprising:

an airbag having an occupant-side surface facing the occupant and a vehicle-body-side surface opposite to the occupant-side surface when the airbag is inflated, and at least an upper chamber and a lower chamber separated from each other,

a gas generator disposed in the airbag for generating gas to inflate the airbag,

a communicating portion between the upper and lower chambers, and

a check valve disposed in the communicating portion for preventing the gas from flowing form from the lower chamber to the upper chamber.

2. An airbag apparatus according to claim 1, wherein said occupant-side surface and said vehicle-body-side surface are joined at peripheries thereof to form a joint line, and said upper and lower chambers are defined by a partitioning joint line extending linearly, said partitioning joint line having one end away from the joint line to form the communicating portion and connecting a part of the check valve to the occupant-side surface and the vehicle-body-side surface.

3. An airbag apparatus according to claim 2, wherein said gas generator is located in the communicating portion so that an upper end of the gas generator extends slightly outwardly from the communicating portion.

4. An airbag apparatus according to claim 1, wherein said communicating portion forms a gas distributor retaining the gas generator therein and has a first outlet port for guiding the gas from the gas generator to the lower chamber and a second outlet port for guiding the gas from the gas generator to the upper chamber, said second outlet having an opening smaller than that of the first outlet port;

5. An airbag apparatus according to claim 4, wherein said gas distributor is formed of a sheet wrapping around the gas generator, and said first outlet port extends toward the lower chamber lower than the gas generator to form the check valve.

6. An airbag apparatus according to claim 4, wherein said gas distributor is formed of the sheet rolled in a cylindrical shape with edges thereof overlapped, and said gas generator is fixed with a mounting member passing through the edges.

7. An airbag apparatus according to claim 4, further comprising a bent unit formed in the upper chamber for allowing the gas to flow from the upper chamber to an outside of the airbag.

IX. EVIDENCE APPENDIX

No copies of evidence are appended hereto.

X. RELATED PROCEEDINGS APPENDIX

No copies of decisions are appended hereto.